Concordanciers : Thème et variations

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Concordancers: Theme & Variations

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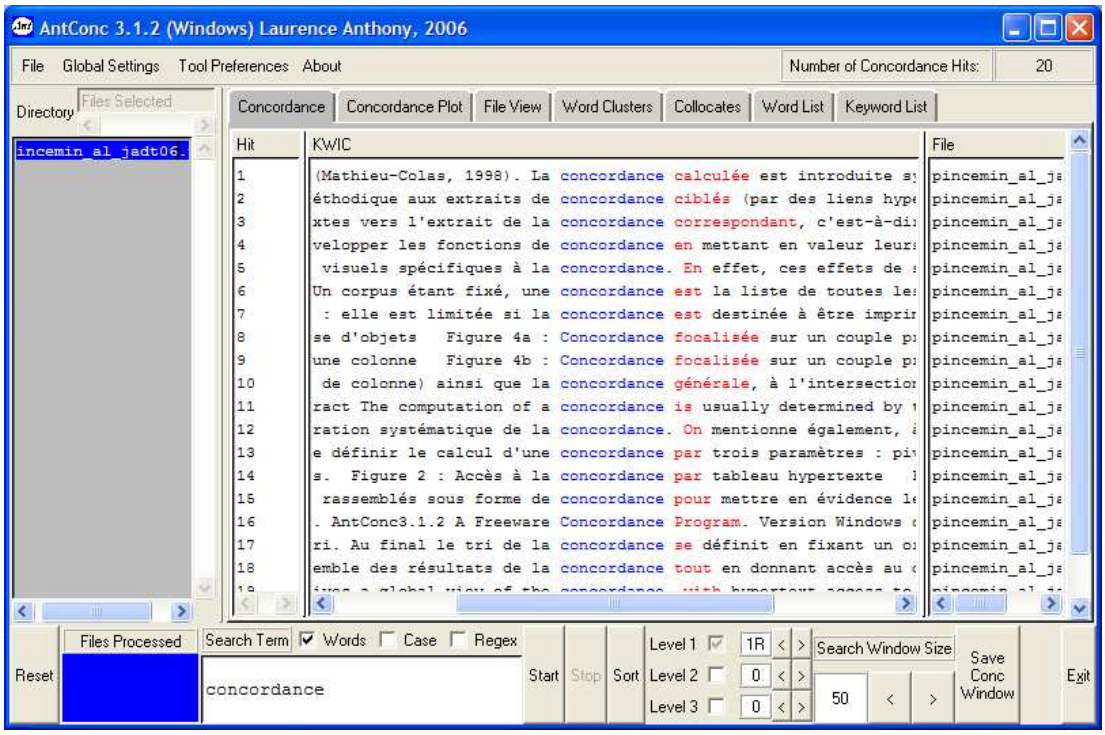
What is a Concordancer ? Or what should it be ?

1) Generalization
   - Key features – summary from existing KWIC tools
2) Extension
   1. Emphasis on meaningful specificity of concordancers
3) Specialization
   1. Case of use in a distributional semantics approach (*Classes d'objets* theory, Gaston Gross)

Example : AntConc



What is a (true) Concordancer ?

- **Definition** (and *parameters*)
  - For a given **corpus**
  - A list of **all occurrences** of a word (or ***linguistic item***)
  - Vertically aligned (column), « **stacked** »
  - Surrounded by their left and right **contexts** (of a given *size*)
  - And ***sorted*** by a relevant criteria

Parameter #1 : Search object

- Word
- Phrase
- List of items (topic,..)
- Stem
- Annotations (lemma, part-of-speech,…)
- Mixed (as a complex regular expression)
  - Example : CQP (Christ, 1994)

Parameter #2 : Context’s size

- A line
  - Visual stack effect : the contexts are vertically aligned and immediately superposed
- Different focus
  - shorter => lexical phrases, syntactic constructs
  - longer => for some semantic considerations
- Centered or not

Parameter #3 : Sorting order

- Not incidental, but really mandatory feature
  - Visual stack effect :
    - Convergences (and their extent : massive convergences)
    - Divergences
- Classical sorting keys
  - Textual linearity (chronologic order)
  - The search expression (if varying)
  - L1, L2… and R1, R2… (words around the search object, on the left and/or on the right)
- Multiple sort
  - In practical, Contextual key = last key

The best of the concordance : visual effects

- Why ? Heuristic guiding for efficient reading
  - convergences and divergences
  - extent (singularity or repetition)
- How ? Stack effect
  - Vertical alignement
  - Sort that groups similar items together

Consequences on the classical definition - towards a new (but tradition grounded) definition

- Parameter #2 (Context's size) is undesirable
  - Illusory power
  - Fixed (default) and adjusted to
    - page / window size (corresponding itself to a good look span)
    - reasonable size of characters for a comfortable reading
  - Possibility of a horizontal curser (for screen output)
- New ways to enhance and refine grouping and contrasting visual effects : the zones

Zones : definition

- The search object is detailed into adjacent zones
- Each zone is qualified by :
  1) A stack column (or not)
  2) A possibly typographical emphasis (bold characters, choice of a colour)
  3) An eventual sort (and which one : alphabetical, textual, canonical…)

Zones : example of query

	Left context	shall	-	MOT{0,3}	-	be .+ed	+	*Right context*
1	No column	No column		column		column		No column
2	Normal	Normal		*Red + Italic*		**Green + Bold**		Normal
3	No sort	No sort		2, Alphabetical		1, Frequence		3, Alphabetical

Zones : example of output

… Such declarations shall		**be deposited**	by the St…
… equally authentic , shall		**be deposited**	in the ar…
…	…	…	…
… Such gratis personnel shall		**be employed**	in accorda..
… under 18 years of age shall	*not*	**be employed**	in night w..
subject to compulsory education shall	*not*	**be employed**	in such wo.
…	…	…	…
… nor life imprisonment […] shall		**be imposed**	for offence.
… was committed . Nor shall	*a heavier penalty*	**be imposed**	than the on
… was committed . Nor shall	*a heavier penalty*	**be imposed**	than the on
… Sentence of death shall	*not*	**be imposed**	for crimes

Benefits from Zones

- Zones are especially efficient to (visually) group and sort tokens selected by a pattern with contextual conditions and (very) variable realizations
- Compared to the state-of-art :
  - As powerful as every kind of sort in existing KWIC concordancers
  - Allows sorting on distant words, with better control (not only the number of words)
- Multiplied and characterized visual stack effects

A concordancer for distributional semantics

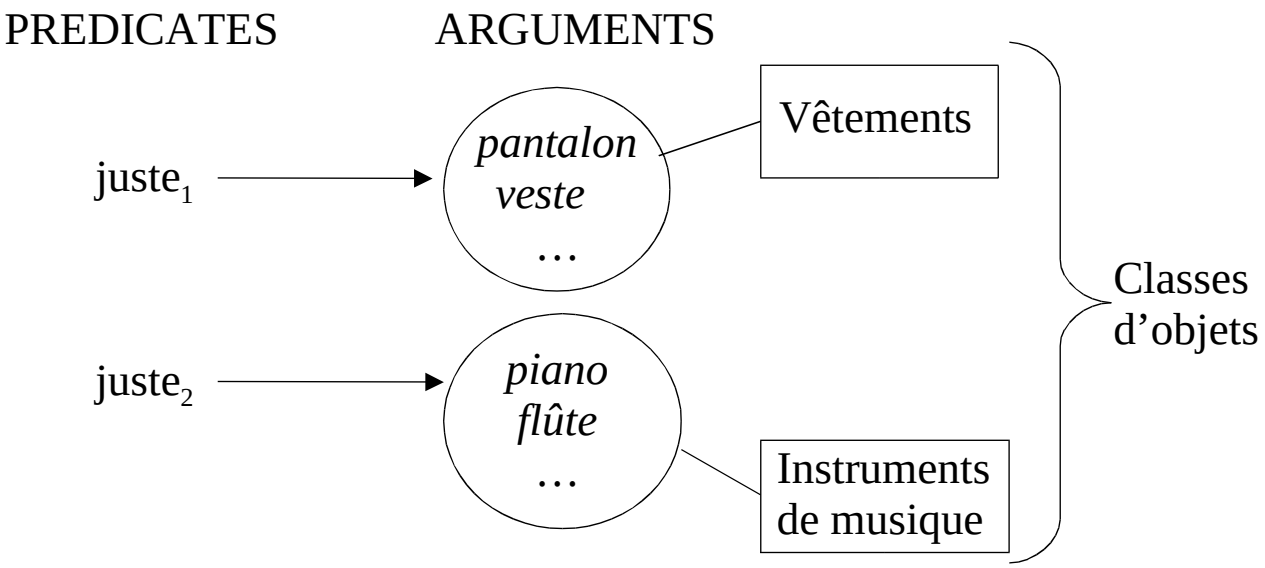
- Context : *Classes d'objets* theory
- Goal : efficient use of corpora in order to build, complete or correct the linguistic description
- Concordancers are already used (and useful) for these tasks, but :
  - Massive outputs
  - Difficulty to focus on contextual dependancies (variability)

Classes d'objets Theory (1/3) : arguments => predicate

- Language (and especially semantics) is described through the predicate – argument dependancies
- Predicates are defined by their argumental pattern, syntactically **and semantically** :
  - Conduire$_1$ (hum, hum, loc) : *Pat conduit son petit frère à l'école*
  - Conduire$_2$ (hum, transport) : *Pat conduit une décapotable*
  - Conduire$_3$ (voie, locatif) : *Ce sentier conduit à la mer*
- Linguistical *vs* ontological approach of semantic

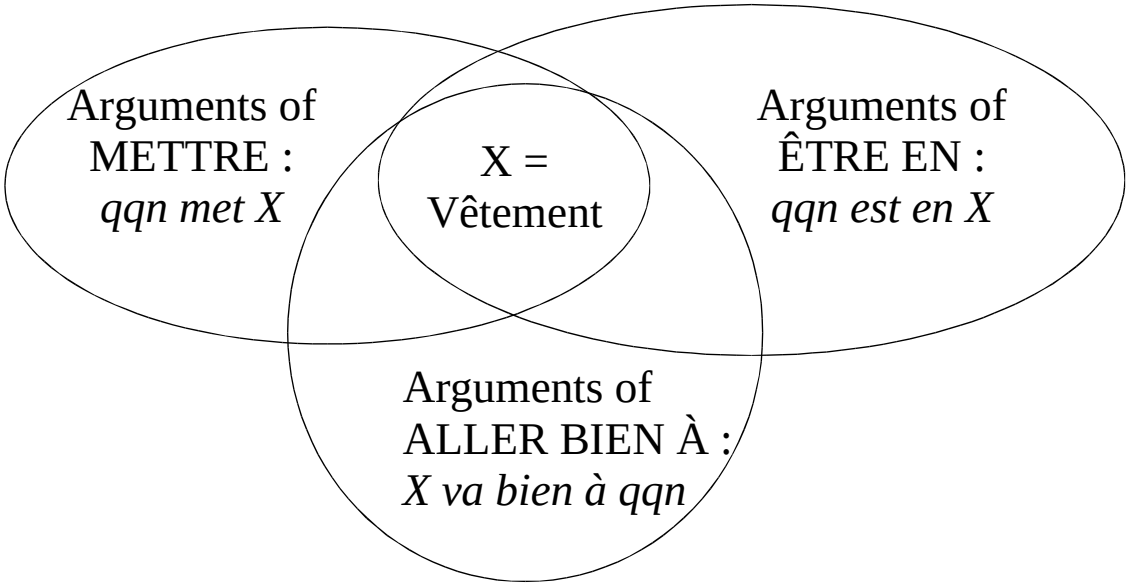
Classes d'objets Theory (2/3) : arguments are structured in classes

An argument's value is taken from a set called *Classe d'objets*



Classes d'objets Theory (3/3) :
(appropriate) predicates => arguments' classes

A few appropriate predicates (*faisceau de prédicats appropriés*) can **select all** the elements of a class, **and only** them

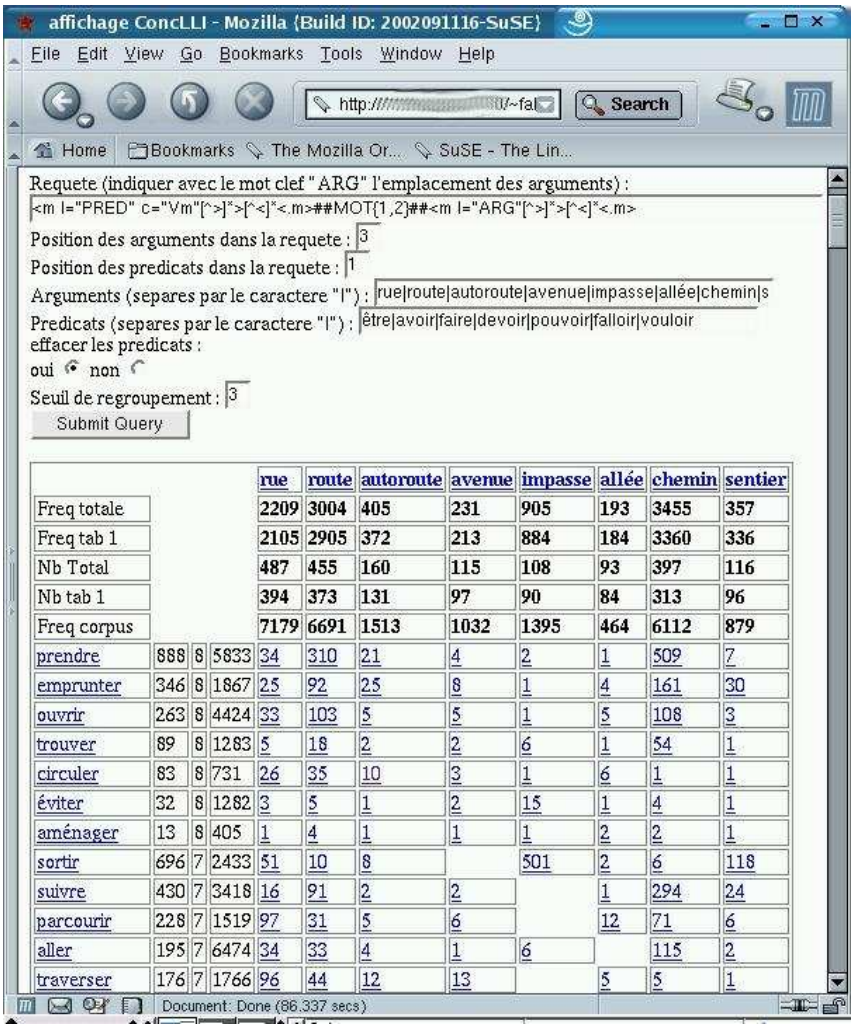


Four ways of exploring a corpus

Looking for → / Building classes of ↓	Syntactic characterization	Class composition
arguments	**Given = *classe d'objets*** **Looking for = appropriate predicates**	Given = appropriate predicates Looking for = elements of the *classe d'objets*
predicates	Given = class of predicates Looking for = *classes d'objets* as defining arguments	*Given = argumental pattern (with* classes d'objets*)* *Looking for = class of predicates*

The KWAC-LLI prototype

- Corpus = Newspaper (Le Monde), morphosyntactically tagged (Cordial)
- Classe d'objets = communication routes (voies de communication, Mathieu-Colas, 1998)
- Goal = to find new appropriate predicates



				rue	route	autoroute	avenue	impasse	allée	chemin	sentier
Freq totale				2209	3004	405	231	905	193	3455	357
Freq tab 1				2105	2905	372	213	884	184	3360	336
Nb Total				487	455	160	115	108	93	397	116
Nb tab 1				394	373	131	97	90	84	313	96
Freq corpus				7179	6691	1513	1032	1395	464	6112	879
prendre	888	8	5833	34	310	21	4	2	1	509	7
emprunter	346	8	1867	25	92	25	8	1	4	161	30
ouvrir	263	8	4424	33	103	5	5	1	5	108	3
trouver	89	8	1283	5	18	2	2	6	1	54	1
circuler	83	8	731	26	35	10	3	1	6	1	1
éviter	32	8	1282	3	5	1	2	15	1	4	1
aménager	13	8	405	1	4	1	1	1	2	2	1
sortir	696	7	2433	51	10	8		501	2	6	118
suivre	430	7	3418	16	91	2	2		1	294	24
parcourir	228	7	1519	97	31	5	6		12	71	6
aller	195	7	6474	34	33	4	1	6		115	2
traverser	176	7	1766	96	44	12	13		5	5	1

Specificities of the concordancer

- Synthetic table
  - Plus some results as lists, when more suited
  - Avoids the output overflow : mediates and organizes the results
- Results are ordered according to the linguistic principle (in the *classes d'objets* theory) :
  - A relevant predicate can be used with all the elements of the *classe d'objets*
- Visual stack effect

				rue	route	autoroute	avenue	impasse	allée	chemin	sentier
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traverser	176	7	1766	96	44	12	13		5	5	1

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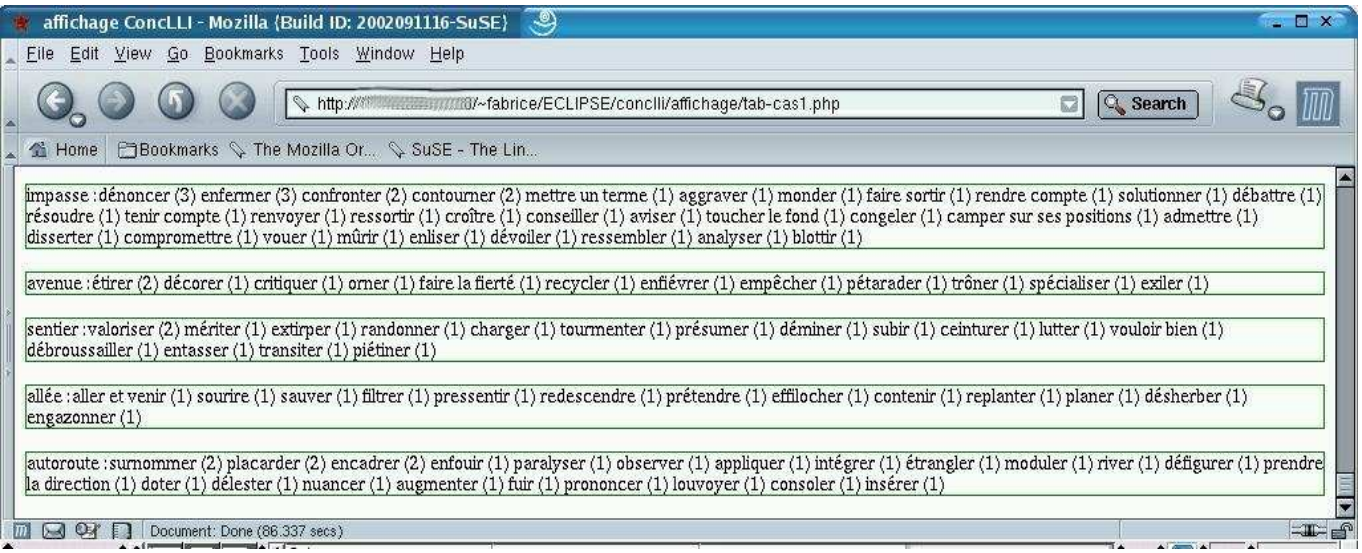
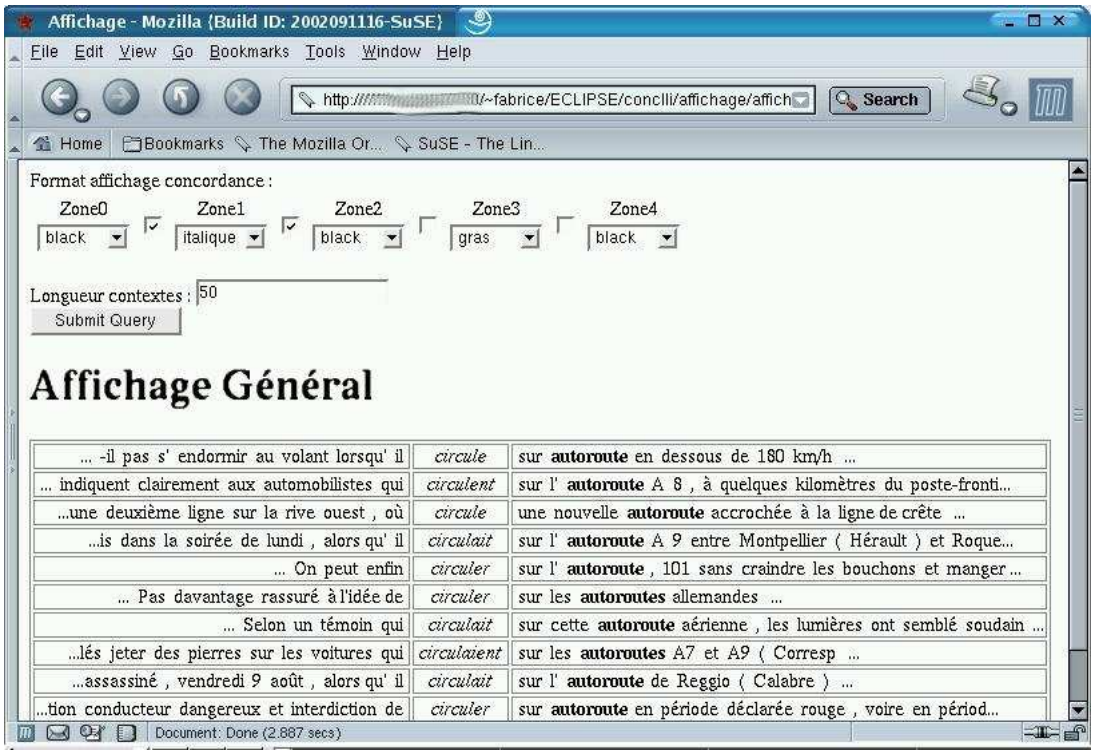
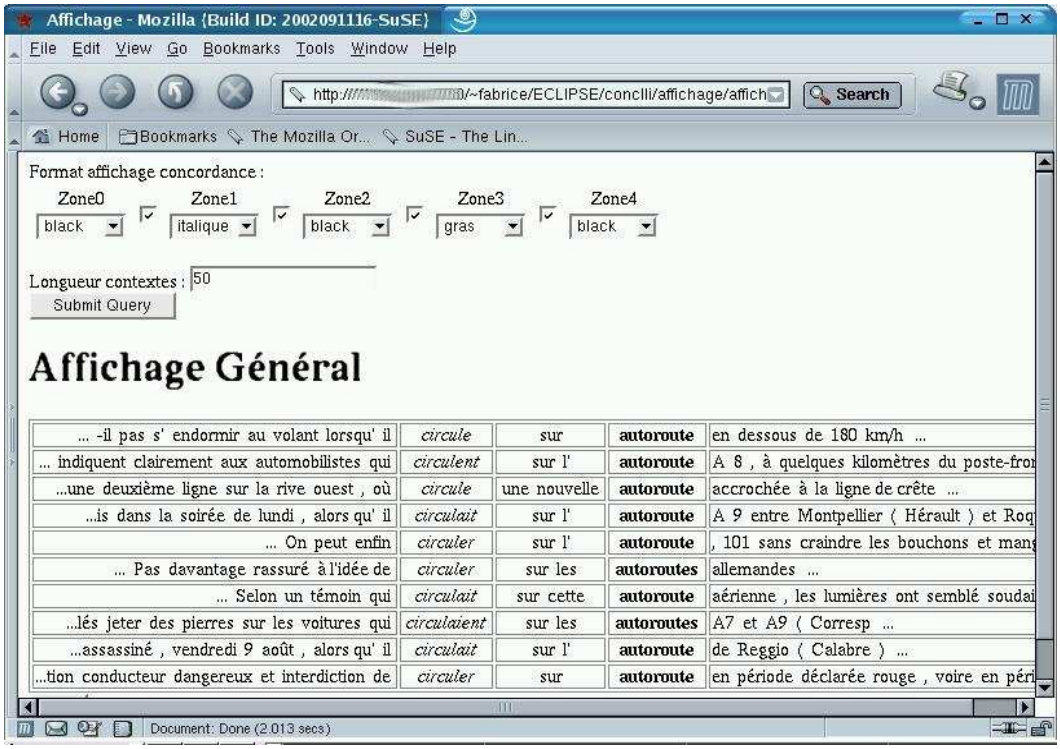
Lists (out of table) : predicates found with only one argument



KWAC-LLI : concordance lines with zones (1)



KWAC-LLI : concordance lines with zones (2)



Main ideas

- A concordance is more than a set of contexts, because of its heuristic **visual effects** : vertical alignment and sort order
- **Zones** to develop and refine querying possibilities
- KWAC-LLI for distributional semantics, with a synthetic table